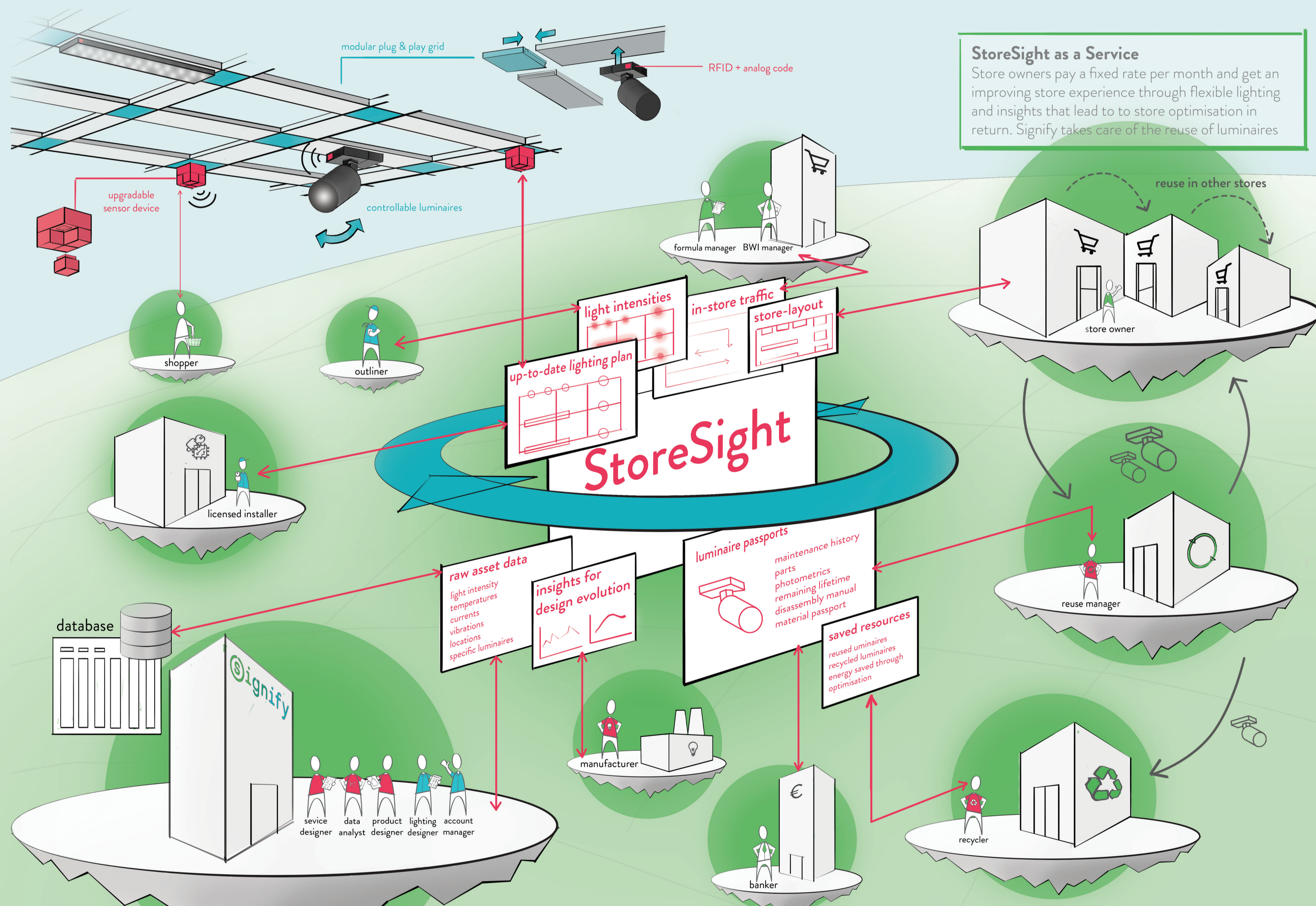


BEYOND ILLUMINATION AND BACK

The use of the Internet of Things in the design of circular supermarket lighting

The effects of the linear economy on our environment are becoming more visible every day. Governments act by introducing sustainability related laws and legislation, stimulating companies to make their products ready for a circular economy. This project aimed at using the benefits of the Internet of Things to design a circular supermarket lighting product-service system for Signify. The result of this design project is StoreSight, a result oriented product-service combination that provides store owners with value that goes beyond the illumination of the store only.



StoreSight as a Service
Store owners pay a fixed rate per month and get an improving store experience through flexible lighting and insights that lead to store optimisation in return. Signify takes care of the reuse of luminaires

Designing circular supermarket lighting for Signify

Signify already offers circular lighting services (e.g. Light as a Service) in a few segments, but is aiming to also do so in the supermarket segment. However, the length of the refurbishment cycles of the supermarkets hinders Signify to offer Circular Lighting as it is offered in other segments. The length of the refurbishment cycles of supermarkets are often a lot shorter than the technical lifetime of a lighting system. As a result, luminaires are replaced and thrown away despite being in perfectly good condition.

CE and IoT

Different academics point out that the Internet of Things (IoT) creates opportunities for circular propositions (e.g., Ellen MacArthur Foundation, 2016; GESI and Accenture, 2016; Pagoropoulos et al., 2017; Bressanelli et al., 2018). The connection of physical objects through the internet enables them to sense their own and their environments status, process this information and interact with their users. These capabilities help service providers to extend the useful life of products, maximise the utilisation of products, loop products through additional use cycles, regenerate natural capital from their products, and make sure these products are used efficiently. Since Signify wants to become a player in the field of IoT and is already equipping its products with sensors and connectivity, there is an opportunity to use this for circular purposes as well.

StoreSight

The result of this design project is the StoreSight concept, a circular result oriented product-service combination that enables the reuse of retail luminaires. Over time, StoreSight will evolve from a service that enhances attractiveness of the store, into service that enhances the shopping comfort and finally into a service that gathers different types of data to enable store optimisation. The StoreSight system roughly consist of three components: hardware, a service squad, and a software platform. The first component, the hardware, consist of a modular lighting grid with movable CE ready luminaires and upgradable sensing devices. The second component, the service squad, consists of the stakeholders from Signify and its partners that will interact with the store owner during the contract period. They will make sure the luminaires will be reused when the store is refurbished. The final element is the platform, a digital software application that enables the different stakeholders to control the lighting and access data about the luminaires from so-called luminaire passports. The StoreSight concept shows how IoT could enable stakeholders to communicate with each other about the luminaires and their remaining value. These insights improve the collaboration of stakeholders in reusing the luminaires in a new lighting plan.

Long-term v.s. short-term

An important insight gained during this project is that IoT and circularity can create, especially in use or result oriented product-service systems, a lot of value. However, in order to capture the value that circular and IoT enabled services offer, companies need to work in a more iterative way and learn to think in long term relationships instead of short term transactions.

Helen Nieuweboer
Beyond illumination and back
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Strategic Product Design &
Integrated Product Design

Committee
Prof. dr. ir. R. Mugge
MSc E.K. Ingemarsdotter
Elena Ferrari (company)
Frank van den Berg (company)
Company
Signify

